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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,960	01/25/2001	R. Rox Anderson	P0547/7051 RJK	5919

7590

03/24/2004

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EXAMINER

SHAY, DAVID M

ART UNIT	PAPER NUMBER
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3739

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DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/769960

Applicant(s)

Anderson et al

Examiner

J. Shy

Group Art Unit

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—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on December 4, 2003.
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-12, 16-72 is/are pending in the application.
Of the above claim(s) 1-12, 28-38, 45-56, 61-65, 69-78 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 13, 16-27, 39-44, 57-60, 66-68, 71-72 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13, 17, 18, 39, 40, 57-60 and 71 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chen et al.

Claims 37-44, 57, 58, 60, 66, 68, and 71 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Knowlton et al ('836).

Claims 13, 16-27, 39-44, 43, 57-60, 66-68, 71 and 72 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Knowlton et al ('276).

Maintaining the collagen at a constant temperature would inherently cause the claimed exponential decrease. Inherently, the heating of the target and the heater will be expressible as some sort of function of the initial and post irradiation temperatures thereof and the relative sizes thereof.

Applicant's arguments have been considered, and while convincing regarding the Anderson et al reference, due to the inclusion of the limitation from claims 14 and 15 (now cancelled) in claim 13, the remainder of applicants arguments are not convincing.

Prior to addressing applicant's specific arguments, the examiner must first respectfully note that applicants claims are very broad in certain of the limitations. Nowhere in the claims under examination is there any mention of any particular value for, extent of, or range of any of the time, flux, flux variation, absorption, power, wavelength of energy applied, or substantially constant temperature, nor save in very few claims is any particular chromophore recited and nowhere is a particular function of the chromophore recited. As applicant is no doubt aware, the examiner is required to give the claims their broadest reasonable interpretation. With this in

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mind the examiner respectfully submits that the claims are unpatentable for the reasons set forth below.

Regarding Chen et al, while it is acknowledged that the intended use of the intended use of the Chen et al device is different from that of applicants disclosed device, this does not per se render the reference unreadable on the claims. For example, the heating device of Chen are LEDs which when heating are turned on for 20-60 minutes – well beyond any thermal relaxation time contained in the instant record and since Chen et al uses a temperature sensor to prevent over heating, clearly the absorbing chromophores are not altered to the point where they no longer absorb, since if this were so, the unabsorbed radiation would no longer heat, but pass out of the tissue. Further, since applicant gives no specifics regarding the maintenance of a “substantially constant temperature” (e.g. acceptable range of temperature, such as plus or minus 1 degree, that can be defined as “substantially constant”) the disclosure of Chen et al column 6 lines 50 to 54 that requires that the tissue be heated “ so as to elevate the temperature to a desired level ... for a desired time” (emphasis added) is considered to fulfill this limitation. Since the light sources are subject to a feedback loop, the flux thereof is clearly adjustable if only to either “high” or “off”.

Regarding Knowlton ('836), the examiner first points out that RF energy is electromagnetic energy and the use of a solution to couple the energy to the tissue in no way prevents the tissue from absorbing the radiation or being heated thereby. While Knowlton ('836) does not discuss the determination of a thermal relaxation time, as shown by Anderson et al (Selective Photothermolysis) the thermal relaxation time of a structure is strictly a function of that structure's geometry and thermal diffusivity (see page 525, column 3 to column 1 page 526)

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and thus is an inherent property of each structure, the thermal diffusivity for melanocytes being about 300 nanoseconds, according to the calculations of Anderson et al. The examiner respectfully notes that energy levels of the intensity that would raise the subdermal temperature by 30 degrees Celsius in about 500 nanoseconds (e.g. substantially greater than the thermal relaxation time of melanin) would raise the surface epidermal temperature by much more (to the point of vaporization) well before any fluent cooling mechanism (assuming this was not also vaporized) could counteract the effect. Since vaporizing the surface tissue would not serve the best mode (e.g. the cosmetic remodeling) of Knowlton ('836), it is clear that the device is operating on a much larger time scale. As with Chen et al, since Knowlton teaches time domain multiplexing the applied electromagnetic energy, the flux is adjustable at least in a binary sense (e.g. "on" and "off"). Regarding the absorption of melanin, the examiner submits that melanin must absorb at least some of energy applied to the skin, even if it be only one femtojoule, this still fulfills the broad recitation of the claim. Applicant appears to imply that the "reverse thermal gradient" of Knowlton ('836) prevents this reference from being applied to applicants "substantially constant" temperature. The examiner must respectfully disagree. A careful reading of the Knowlton ('836) reference shows that the temperature gradient referred to thereby is a spatial gradient. As the claim language may also be applied to a temporal constancy, the maintenance of a spatial gradient over time still reads on this term, with the breadth of "substantially constant" noted above being supplied by the temperature control of Knowlton ('836).

Regarding Knowlton ('236), it is noted that the arguments, are substantially as set forth above.

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Any inquiry concerning this communication should be directed to David Shay at
telephone number 308-2215.

Shay/DI

March 11, 2004



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PRIMARY EXAMINER
GROUP 330